WPS 1378

POLICY RESEARCH WORKING PAPER 1378

Mexico after the Debt Crisis

Is Growth Sustainable?

Daniel Oks
Sweder van Wijnbergen

The restructuring of Mexico's external debt under the Brady deal "smoothens" the external transfer to foreign creditors. The "smoothening" of the external transfer had far more impact on Mexico's domestic economy than did the reduction of debt and debt servicing per se. The financing of the expansion that ensued was dominated by private capital flows. Are the large current account deficit and its financing cause for concern? Is growth sustainable?

The World Bank
Latin America and the Caribbean, Country Department II
Country Operations Division 1
November 1994

POLICY RESEARCH WORKING PAPER 1378

Summary findings

The story of Mexico's involvement in international capital markets is one of riches to rags and back to riches again. Four periods can be distinguished:

- Stable, steady international borrowing through the 1950s and 1960s.
- Heavy reliance on international loans through commercial bank syndicates from the mid-1970s until 1982.
- Massive capital flight, zero access to private lenders, and complete reliance on official sources from 1982 to 1990.
- Massive return of flight capital, a continued drought in syndicated loans, but heavy expansion of foreign direct investment, portfolio investment, and bond placement.

Easing the transition from the third to the fourth period was the restructuring of Mexico's external debt under the Brady deal, which ultimately reduced — and "smoothened" — the net transfer to foreign creditors. Oks and van Wijnbergen argue that "smoothening" the external transfer had far more impact on the domestic economy than the reduction of debt and debt servicing per se.

The financing of the expansion that ensued in the fourth period differs dramatically from what was observed earlier in Mexico's history. Foreign capital inflows were dominated by foreign direct investment and especially portfolio investment and, unlike in the second period, most inflows financed the domestic private sector. Are the current rate and pattern of borrowing — at levels unforeseen at the time of the Brady deal — a cause for concern? Is growth sustainable?

To answer these questions, Oks and van Wijnbergen analyze the domestic macroeconomic counterpart of the large capital inflows and high current account deficits of the early 1990s.

Whether growth is sustainable depends on the level of domestic saving. But even if domestic saving increases, the transition to sustainable growth is unlikely to be smooth because the slowdown in consumption growth (associated with improved saving) is likely to be contractionary.

The outcome depends on how investment and net exports respond. Oks and van Wijnbergen analyze cyclical and structural factors of investment and the external sector, and their interactions with Mexico's exchange rate and monetary policy, to interpret the recession in the second half of 1993.

They emerge from their analysis with cautious optimism about Mexico's medium-term prospects.

This paper — a product of the Country Operations Division 1, Latin America and the Caribbean, Country Department II — is part of a larger effort to assess the sustainability of the recovery in the region. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sahra Harbi, room H11-123, extension 37143 (42 pages). November 1994.

Mexico After the Debt Crisis: Is Growth Sustainable? [1]

Daniel Oks
World Bank

and

Sweder van Wijnbergen
University of Amsterdam,
LSE and CEPR

---

[1] The views expressed in this paper are those of the authors and do not necessarily represent those of the institutions to which they are affiliated. Preliminary drafts of this paper were presented at the OECD Development Center-IDB Conference on Capital Flows in November, 1992 and the NBER Latin American Conference in May, 1993. The authors acknowledge the various comments received at these meetings. They also thank Jiming Ha for his key contributions to Annexes 1 and 2.

I. Introduction

The story of Mexico's involvement in international capital markets is one of riches to rags back to riches. Four periods can be clearly distinguished: (a) stable steady international borrowing throughout the fifties and sixties; (b) explosive reliance on international borrowing through commercial bank syndicates from the mid-seventies until 1982; (c) massive capital flight, zero access to private lenders and complete reliance on official sources from 1982 to 1990; (d) massive return of flight capital, a continued drought of syndicated loans but strong expansion in DFI, portfolio investment and bond placements. One of the key factors that explain the transition from c) to d) is the restructuring of Mexico's external debt under the Brady deal. The Brady deal led both to a reduction of the net transfer to foreign creditors and to a "smoothening" of the net transfer. The hypothesis that is often offered to support the need for debt and debt service reduction in heavily indebted countries is that mainly debt and debt service reduction matters. This paper will argue that the "smoothening" of the external transfer had a much stronger domestic impact than the reduction of debt/debt service per se.

The financing of the expansion that ensued during period d) differs dramatically from what could be observed in any earlier period of Mexico's history. Foreign capital inflows were dominated by foreign direct investment and, in particular, portfolio investment; and, unlike in the late 1970s-early 1980s, most inflows financed the domestic private sector. Is the current pattern and rate of borrowing, at levels totally unforeseen at the time of the debt deal, a cause for concern? Is growth sustainable? To answer these

questions, we look at the domestic macroeconomic counterpart of the large capital inflows/high curren account deficits of the early 1990s.

Growth sustainability ultimately depends on the level of domestic saving. However, even if domestic saving increases from the low level reached in 1992-93, the transition to a sustainable growth path is unlikely to be smooth, as the slowdown in consumption growth (associated to the improvement in domestic saving) is likely to be contractionary. The outcome will depend on how investment and net exports respond. Our analysis of cyclical and structural factors of investment and the external sector, and of their interactions with Mexico's exchange rate and monetary policy, provides an interpretation of the recession during the second half of 1993; it also leads to a cautious optimism over medium term prospects.

The paper is organized as follows. The patterns of capital flows in/out of Mexico, focusing on the events that led to the Brady deal and the dramatic reversal of capital flows in 1989-1990, are discussed in Section II. The domestic impact of the Brady deal is analyzed in Section III. The macroeconomic counterpart to massive capital inflows in 1990-92 and its implications for growth sustainability are examined in Section IV. The cyclical and structural factors of private saving, investment and the external sector as well as their interactions with macroeconomic policy are examined in Section V. The conclusions are in Section VI. Annex 1 provides an analysis of stability in Mexican asset markets; Annex 2 presents an econometric model of Mexico's manufacturing external sector.

II Patterns of capital flows in and out of Mexico. [2]

The fifties and sixties saw conservative fiscal policies, steady growth and low inflation. The international environment was hospitable by later standards, with real interest rates well below Mexico's own rate of growth (Figure 1); as a result Mexico could sustain deficits on its non-interest current account throughout the period while maintaining its debt-output ratio at around twenty percent.

But oil discoveries in the late seventies followed by the second OPEC price explosion in 1979 triggered a strong fiscal expansion in Mexico at the same time that banks tried to recycle OPEC's surpluses. Real interest rates on international capital markets turned sharply negative while the strong fiscal expansion fueled by skyrocketing oil revenues pushed up Mexico's rate of growth. It is a measure of the extraordinary push into debt of the time that, in spite of the highly favorable turn in the output growth-foreign interest rate differential, Mexico doubled its debt-output ratio between 1974 and 1982. The true measure of this expansion is moreover masked by a strong real appreciation, slowing down the rate of increase in the debt-output ratio; while the latter only doubled, the real value of Mexico's external debt trippled in constant foreign prices.

The monetary anti-inflation policies in the US and the UK in 1979 sharply turned the international environment against Mexico. Real interest rates turned abruptly positive, while oil prices, after the 1979 euphoria, collapsed almost as fast as they had gone up before (Figure 2). These adverse shifts triggered alarm bells about its borrowing strategy that went unheeded

---

[2] Source for Figures in all sections was INEGI and Bank of Mexico.

for a surprizingly long time. Syndicated bank loans continued to flow straight through 1980, 1981 and even 1982.[3]

The private sector inside Mexico showed more foresight: 1981 is the year where capital flight exploded (Figure 3). The ensuing reserve losses forced an end to Mexico's decades-old exchange rate policy of fixing against the dollar. In August 1982 Mexico announced suspension of debt service on its commercial loans, setting off the global debt crisis. Access to private credit facilities stopped almost overnight, ushering in a period of radical change in Mexico. in the ensuing 6 years, it made large net transfers (on average 5% of GDP) to its private creditors, as interest was serviced throughout. The domestic counterpart of this external transfer was an unparalleled fiscal adjustment. The public sector's non-interest deficit, at 8% of GDP in 1981, turned into a 5% surplus within two years. Further tightening took place during Mexico's successful stabilization program (1988-1991).

Immediately after the debt crisis, Mexico turned sharply inwards, putting all trade under quantity controls and imposing stringent, although ultimately unsuccesful, capital controls. In Cambridge England fashion, QRs were to control the balance of payments (BoP), while fiscal expansion, started in 1984/85, was to restore growth. Instead, a BoP crisis ensued, and an IMF stand by program was called for: Mexico had to rely exclusively on official creditors.

In 1986, faced with natural disaster (the earthquakes in Mexico City in

---

[3] Lending to parastatals may have been encouraged by explicit government guarantees; it remains an open question the degree to which lending to private borrowers may have been driven by "implicit" government guarantees. In 1983, after the debt crisis erupted, the government created a trust (FICORCA) whereby the government absorbed the real exchange rate risk of foreign private debts.

1985) and plummeting oil prices, Mexico made a volte face in its economic policy. In the next four years, a far reaching and radical program of economic reform was skillfully designed and implemented, with massive support by the World Bank and the IMF. QRs were almost abolished, tariffs reduced to an average of about 12%, industrial deregulation and administrative streamlining was started and a comprehensive financial sector reform implemented. A basically bankrupt banking system was turned into a privatization success (the government received in excess of US$12 billion from the sale of commercial banks in 1991-92). The whole program was capped by a drastic privatizaton program, reducing the share of GDP produced by state enterprizes from about 24% in 1985 to 6% in 1992. Moreover, when inflation failed to respond to the restrictive fiscal policies of the mid-eighties, the government announced the "Pacto" in December 1987, an agreement between the government, private firms and the unions to stabilize the economy through further tightening of fiscal and monetary policy, backed up with temporary wage and price controls, and a one year freeze of the exchange rate against the dollar. Afterwards, the government adopted a preannounced crawling peg which was followed, since November 1991, by an exchange rate band (with the band floor fixed at the November, 1991 level and the band ceiling following a preannounced crawling peg rule).

Throughout the period of the debt crisis, i.e., between 1982 and 1988, private capital markets failed to provide Mexico with the breathing space needed to cover the period between short term costs and long term benefits of the reform program. Instead Mexico had to rely on official creditors, who backed Mexico's reforms with a substantial increase of their exposure in Mexico. For example, at its peak in 1991, the World Bank had about 12 percent

of its assets outstanding in Mexico.[4]

The Brady package for Mexico's debt restructuring started a period of dramatic reversal. The package was implemented with the help of a major cash infusion by the World Bank, the IMF and Japan (cf van Wijnbergen (1991)); private capital started to return almost immediately. The Government's initial response was, to let interest rates fall rather than quantities flow in; interest rates dropped by twenty percentage points within days of the announcement of the package (Figure 4). Interest rates increased towards the end of 1989 and prior to the implementation of the deal in the first months of 1990. However, once the package was implemented, and once doubts about Mexico's ability to finance the build up of the various guarantee funds required (as well as the gap created by the re-timing of interest payments) were allayed, private money came back and interest rates resumed a sharp downward trend.

The analysis of capital flight on which we draw (Erideau et alii 1992) only uses annual data, so timing within 1990 cannot be picked up; but the analysis (cf. Figure 3) clearly shows a dramatic reversal in 1991. For the first time in the entire period covered, flight capital came back. Recorded capital inflows also shot up. Commercial banks started to issue Euro CDs, DFI shot up by a factor of 5 in two years, and portfolio investment (largely in response to the very succesful privatization program) soared (Table 1). Over

---

[4] Some have argued that the continued official lending shows that those institutions are ultimately soft and their seniority status of dubious standing (Bulow and Rogoff (1988)). This is in our view a serious misinterpretation of events. Both institutions lent at such a large scale because in their view Mexico's adjustment policies deserved a chance and were likely to succeed; economic efficiency accordingly justified borrowing against the future recovery of output. Later events clearly justified that view. And as to seniority, it was the tough commercial banks who saw their debts written down in 1989/90, while both the IMF and World Bank loans are meticulously serviced, even now when both have entered a period of negative transfers. One can entirely plausibly argue that the commercial banks' failure to support Mexico's reform program (beyond debt rescheduling and relatively small amounts of new money) was as shortsighted as their uncritical bankrolling of Lopez-Portillo's unsustainable fiscal expansion was in earlier periods.

1991-93, annual capital inflows to Mexico averaged $27 billion.

But the nature of capital flows was quite different from earlier periods. Large commercial bank loans are clearly a thing of the past; much of the non-equity part of the inflows constitutes a process of reintermediation rather than foreigners investing in Mexican assets; and foreigners are taking a larger equity stake than ever before.

III. The domestic impact of the Brady deal.[5]

In the wake of the restructuring of Mexico's external debt under the Brady deal, interest rates declined and private fixed investment growth accelerated.

The conventional view is that a reduced public sector transfer to foreign creditors frees fiscal pressures on the domestic financial system, thus lowering interest rates and fostering investment. According to the "debt overhang hypothesis" (cf. Krugman), debt relief can also foster investment by reducing expected taxes on future output. In this section, we propose an alternative hypothesis. In our view, it was reduced uncertainty (as measured by the reduced variance of the transfer to foreign creditors), not debt relief per se, what mattered most.

The Brady deal led both to a reduction of the anticipated net transfer to foreign creditors (NT) and to a reduction of the variance of the anticipated net transfer (SNT). [6] The evidence below suggests that the reduction in the net transfer (NT) played an important role in reducing country risk (as measured by the interest differential between US Treasury Bills and dollar-indexed Mexican Treasury Bills of the same maturity). However, the evidence also suggests that the reduced variance (SNT) helped reducing foreign exchange rate risk (as measured by the interest differential between peso-denominated and dollar-indexed Mexican Treasury Bills of the same

---

[5] This section is based on Stijn Claessens, Daniel Oks and Sweder van Wijnbergen (1992).

[6] See Claessens et alli. for a description of the construction of NT and SNT.

maturity), and that the reduction of country risk was relatively small compared to the reduction of foreign exchange rate risk.

In order to assess the domestic macroeconomic impact of the Brady deal, first, we consider the impact on physical capital accumulation and, second, we assess the impact on interest rates. We then separate out foreign exchange rate risk from more general country risk by analyzing the response to the Brady deal of both local currency and dollar-denominated Mexican debt instruments.

III.1 Debt Relief and Private Investment

Equ. (1) links private investment[7] to the measures of net transfer and variance of the stream of anticipated transfers using Ordinary Least Squares (OLS):

$$(1) \qquad log(Ip) = \underset{}{2.276} + \underset{(3.30)}{0.020}*log(NT) - \underset{(-3.03)}{0.146}*log(SNT) + \underset{(2.99)}{0.476}*log(Ip_{-1})$$
$$\qquad\qquad\qquad\qquad\quad (0.56)$$

$R^2 = 0.69$ H-Statistic = -1.409 F = 32.62 Sample: 1988.04-1990.12

The variance of net transfers enters with the right sign and is highly significant. The debt overhang proxy (NT) is insignificant and even gets the "wrong" sign. The H-statistic indicates absence of serial correlation. The results suggest that NT, the proxy for debt overhang, is not significant, and that the variance of the transfer variable is.

III.2 Interest rates and debt relief I: exchange rate risk

Consider next a similar analysis, but now for peso-denominated domestic government debt (CETES). This asset allows us to focus the analysis directly on exchange rate expectations by first looking at the rate differential between CETES and PAGAFE (dollar-indexed domestic debt). The difference in

---

[7] The monthly index of private fixed investment published in "Indicadores Economicos" of the Bank of Mexico.

currency denomination is the only difference between the two debt instruments and, so, it captures the currency or foreign exchange rate risk (more specifically, the sum of devaluation expectations and the premium for exchange rate uncertainty). Figure 5 shows the CETES-PAGAFE (TESOBONO) interest rate differential.

Regressing the interest rate differential corrected for preannounced devaluation, INTDIFF1[8], on the same RHS variables yields:[9]

(3) INTDIFF1 = -0.162 + 0.076*NT + 0.429*SNT
(-1.01) (0.81) (2.56)

R^2 = 0.77 DW = 1.67 Sample: 1988.3 - 1990.12

This regression indicates that the variance of net transfers, rather than the projected net transfer itself, is the main factor behind the dramatic interest rate response to Mexico's debt package.

III.3 Interest rates and debt relief II: country risk

Consider finally the differential between PAGAFE and the one month US T-bill, INTDIFF2. Because both are denominated in US dollars, the difference between them is a pure measure of country risk. Regressing INTDIFF2[10] on the variance and expected value of the net transfer yields the following:

(4) INTDIFF2 = -0.005 + 0.115*NT + 0.07*SNT
(0.02) (1.99) (0.76)

---

[8] $INTDIFF1 = \frac{(1+i)}{(1+i_{PAG})(1+\gamma)}$, with i for CETES, i^{pag} for PAGAFE, and γ the preannounced rate of devaluation. Note that the preannounced devaluation was systematically lower than the sum of the expected devaluation and the exchange rate uncertainty premium (measured by $i - i_{Pag}$)

[9] All interest rate equations were estimated using the Maximum Likelihood procedure in SAS assuming first order serial correlation, as the DW statistic in OLS regressions always indicated serial correlation.

[10] $INTDIFF2 = \frac{(1+i_{PAG})}{(1+i_{USTB})}$

R^2 = 0.80 DW = 1.24 Sample: 1988.3 - 1990.12

Now the variance of the transfer is completely insignificant, and the transfer itself is only borderline significant. The DW statistic is in the middle of the inconclusive range (1.11-1.36) for the relevant number of degrees of freedom; however regressing the error term on its own lag yields a t-statistic on the latter's coefficient of only 1.35, so we did not apply any further error corrections.

These results are strikingly different from the ones obtained for investment and the CETES-PAGAFE interest rate differential. The variance plays no role, and the transfer itself only marginally, in explaining the interest rate differential between PAGAFE and the one month US T-Bill rate; exchange rate uncertainty plays no role here since both assets are dollar denominated, and the transfer effect captures the partial reduction in country risk.

III.4 Summing Up

The transfer effect is significant in explaining the improvement of country risk; however, one should be aware that the PAGAFE rate dropped only 4 percentage points after the Brady deal. Reduction in pure country risk thus explains only 20 percent of the overall drop of 20 percentage points in the differential between CETES and the T-bill rate. According to our econometric results, the entire drop in the CETES-PAGAFE differential (16 percentage points) can be ascribed to the variance effect, and the entire 4 percentage points drop in the PAGAFE/US Treasury bill differential to the transfer effect. Our econometric results thus show that the variance effect was substantially more important in explaining the interest rate decline after the Brady package than the debt overhang hypothesis.

The most important conclusion that follows from our results is that the likely impact of debt restructuring-cum-debt service relief can be much larger than the magnitude of the relief per se coupled with standard growth models would suggest. The secondary effects on private investment through reduced future uncertainty are likely to be more important than the direct amount of the relief itself. Our results point out specifically at the favorable

impact on uncertainty about future exchange rate crises as the dominant factor in explaining the investment and growth response to debt relief.

An important qualification follows also, however, almost as a corrollary; these secondary effects through reduced uncertainty will obviously not come into play unless other, potentially dominant sources of future policy uncertainty have been removed first. Thus the successful domestic reform program that the Mexican government put through in the years preceding the debt package was a necessary precondition for it to be successful.

IV. Is growth sustainable after the Brady deal?

The longer maturities and increased share of fixed-interest debt that the Brady deal brought about, along with the larger share of risk capital that is associated with high foreign investment in the post-Brady deal era, help to reduce Mexico's vulnerability to a potential crisis. However, much of the inflow is clearly a stock adjustment rather than a continuing flow: the privatization program is basically over, and Mexicans can bring their money back in only once. This raises the issue of sustainability once again, the more so because the whole process has been accompanied by an unprecedented deterioration in Mexico's current account balance. Mexico's current account deficit balance declined from a US$3.8 billion surplus in 1987 to an annual US$24 billion deficit on average in 1992-93 (Figure 6).

A simple calculation based on recent patterns of saving, investment and growth indicate that, at 1993 levels of saving, the 1990-92 rates of growth were not sustainable. For the economy to grow at 3.6%, the average growth in 1990-92, given an average ICOR (incremental capital-output ratio) of 5.8 for the same period, aggregate investment ought to be around 21% of GDP (3.6 times 5.8). Based on the most recent domestic saving figures, 16% of GDP during 1993 (using preliminary constant price national accounts data), achieving the above investment rate requires foreign saving of about 5% of GDP. For growth to be

sustained, net foreign liabilities cannot grow systematically faster than GDP. [11] Given net foreign liabilities (debt and equity) in a range equivalent to 25%-50% of GDP, it follows that foreign liabilities (i.e., foreign saving) are growing at an annual rate in excess of 10% (5 divided by 50), which is about three times the rate of output growth in 1990-92 or more.

Around three-quarters of the increase in foreign saving, i.e., the decline in the current account balance, and public saving between 1988-89 and 1992 was accounted for by declining private saving; only about one-quarter was accounted for by higher investment (Table 2). [12] Even if domestic saving was at a high enough level to support sustainable economic growth, a continuation of the recent downward trend in domestic and, in particular, private saving (Table 2) could turn growth unsustainable.Note that without the sharp improvement in net public saving (public saving minus public investment) the decline in domestic saving and, hence, the decline in the current account balance, would have been substantially larger.

V. Will saving improve? If so, can a recession be avoided?

Private saving should improve in the future (Subsection V.1). However, the contractionary effects of the slowdown in consumption are unlikely to be offset in the short term by stronger net exports (Subsection V.2). Over the medium term, structural factors are likely to induce an investment-driven and, eventally, export-driven recovery (Subsection V.3).

---

[11] This condition stems from the differentiating the following steady state condition: NFL/Y < (=) c (NFL is net foreign liabilities, Y is GDP and c is a constant).

[12] The estimate of private saving was based on current price data; using constant price national accounts, the share of investment to GDP increases 2.9 percentage points (instead of 2.2 p.p.) and, ceteris paribus, would imply that investment is accounting for a relatively larger share of the deterioration in the current account deficit. Current price national accounts data for 1993 was not available and so, Table 2 only shows the decline in domestic saving to 1992. Measured in constant prices, the private consumption-GDP and investment-GDP ratios declined slightly during 1993.

V.1 Has the decline in private saving been cyclical or structural?

One possible interpretation for the most recent decline in private saving is that it is a cyclical phenomenon. In the upswing, there is abundant liquidity (cf next para.) which allows consumers to borrow against future income; while, during the downturn, liquidity contracts and makes liquidity constraints more binding. Under this interpretation, the relaxation of liquidity constraints (increased consumer's access to credit) brought about by financial liberalization, improved access to foreign capital markets, and price stabilization (supported by strong negative net public borrowing) made possible a consumption catch-up effect. [13] The fastest growing asset of the domestic commercial banking system was in fact consumer credit. Between March 1989 and April 1992, consumer credit increased 236% in real terms (about 50% growth per annum in real terms); in the same period commercial bank credit to enterprises increased at about half that rate and credit to the public sector was cut by half.

Much of the increase in consumption in this case stems from increases in purchases of durable goods. Durable consumption growth has indeed faster than non-durable consumption growth, thus, suggesting that the measured decline in private saving may not correspond with a real decline (the real decline has to measure the flow of services derived from durables rather than the change in the stock of durables). However, even non-durable private consumption grew 1.6 percentage points faster than GDP annually over the 1988-91 period, indicating that there was still a decline in private saving that has to be

---

[13] See Ha-Oks (1992). According to the analysis in this paper, there has been a shift in the level of liquidity constraints in the first quarter of 1990; this shift coincided with the implementation of the Brady deal for foreign debt restructuring (including a substantial reduction).

explained (note that durable consumption in the early 1990s was less than 15% of total consumption).

Large capital inflows can, in turn, be viewed as part of a portfolio stock-adjustment mechanism which induces large inflows in the beginning only. Under this interpretation, the real exchange rate initially appreciates and, if this is anticipated, real interest rates also drop. However, as capital inflows slow down (and at some point in the future they are possibly reversed) a real depreciation is required and higher interest rates can be expected. This cycle of real exchange rate appreciation/low real interest rates followed by real exchange rate depreciation/high real interest rates is also likely to condition consumption behavior. Cyclical consumption behavior can also stem from exchange rate-based stabilizations (cf. Kiguel and Liviatan (1992)).

It is of course possible that fast consumption growth (relative to GDP growth) until 1992 has stemmed from permanent income expectations based on future (rather than current) income growth. This, in turn, could have resulted from large capital gains on assets, e.g., on the stock market and on property. However, upward revisions of permanent income may have been over-optimistic. There is some evidence that the surge in stock market prices in Mexico has not been well explained by "fundamentals", i.e., gains in the stock market may have resulted from speculative behavior (cf. Annex 1).[14] If consumers feel richer out of their speculative (and, hence, transitory) capital gains they are more likely to spend excessively. Excessive optimism

---

[14] Cyclical consumer behavior could also have stemmed from overoptimistic changes in housing wealth. According to some estimates (Ha and Oks (1992)), changes in the stock of housing wealth (around 5 times bigger than the stock market capitalization) may have explained around 20% of the changes in private consumption during the 1980-91 period. It is not clear, though, whether the same type of speculative behavior observed in equity markets also took place in housing markets. A similar ("bubble") test failed to identify the existence of speculative behavior (cf. Annex 1). However, the measure of "fundamentals" employed, rentals published by the central bank, may be disproportionately influenced by controlled rents.

during the upswing is likely to be followed by excessive pesimism during the downturn.

If private saving has indeed been cyclical, and the slight contraction in the private consumption-GDP ratio in 1993 supports this hypothesis, a recessionary period is likely to follow unless: i) the external sector compensates for the fall in domestic consumer demand; and/or ii) investment picks up.

V.2 Cyclical and structural factors of Mexico's manufacturing trade balance

The performance of Mexico's manufacturing trade balance over recent years has obeyed to both structural factors (productivity growth, a proxy for various structural reforms, and trade liberalization, which affects productivity but also has a direct impact on trade flows) and cyclical factors (capacity utilization, foreign demand and the real exchange rate). For example, on one hand, it is possible that the bulk of the surge of imports over 1989-93 was driven by Mexico's needs to modernize its capital stock and that, as a new plateau of machinery and equipment is reached, import growth will tapper off. On the other hand, it could have happened that as a result of the strong real peso appreciation, Mexican consumers/producers have substituted foreign production of consumer/intermediate goods for domestically produced goods (consumption and intermediate goods in fact represent about 75% of all imports during the period). In this case, unless there is a change in the external competitiveness, e.g., the real exchange rate, too many Mexican goods could be priced out of the market, and Mexico's external sector may not

be able to offset the likely contractionary effects of an improvement in saving.

According to an econometric model of Mexico's manufacturing trade balance (cf. Annex 2), the largest share of the recent deterioration of Mexico's manufacturing trade balance was accounted for by the appreciation of Mexico's real exchange rate (obtained comparing Mexican and US wages, cf. Figure 7). According to our simulations, had Mexican dollar wages increased at the rate of US inflation since the end of 1988 (i.e., had the real exchange rate remained constant), Mexico's manufacturing trade balance (including maquila) would have been 58% smaller than it actually was in 1991. [15]

One argument often invoked in favor of Mexico's external competitiveness is that the real exchange rate based on Mexican wages is substantially more depreciated than what the exchange rate based on the CPI or PPI indices suggest. It is indeed true that real exchange based on Mexican wages (and the US CPI index) is substantially more depreciated than the real exchange rate based on the CPI price index (46% between 1980 and mid-1992 compared to 7.4% according to a trade weighted CPI-based exchange rate). However, a measure of the real exchange rate based on wages adjusted for gross labor productivity in manufacturing, shows that in 1990 the peso was only 20.4% more depreciated than in 1980 [16]; this is only slightly more than the 7.4% real depreciation implied by the CPI-based real exchange rate.

According to our simulations, other cyclical factors of the

---

[15] At the time this econometric analysis was done (mid-1992), only quarterly data to 1991 was available. The period covered is 1980-91.

[16] Note that real wages in 1980 were at historically very high levels and the real exchange rate that year is often viewed as if it had been overvalued (at least for the expansionist policies of that time). Mexican labor productivity growth picked up sharply in the early 1990s, but so did average real wages.

manufacturing trade balance in our model played a less important role. For example, if capacity utilization in manufacturing would have remained at its 1987 level, in 1991 the manufacturing trade balance (excluding maquila) would have been 10% smaller. And, had US imports growth remained at their pre-recession levels, Mexico's manufacturing trade balance (including maquila) would only have been 20% smaller than it was in 1991.

Among the structural factors that explain the decline in the manufacturing trade balance the most important were trade liberalization and productivity growth. Reduction of quotas on intermediate goods exerted a negative impact and the reduction of quotas on capital goods exerted a positive impact on the trade balance. Substitution of foreign intermediate goods for domestic intermediate goods explains the former effect; improved access to capital goods explains the latter. From our analysis (cf. Annex 2), the additional reduction of the two types of quotas implied by NAFTA would lead to a further widening of the manufacturing trade deficit as the potential impact of the elimination of remaining quotas on intermediate goods is larger than the potential impact of elimination of remaining quotas on capital goods.[17]

Productivity growth also exerted a positive impact on the manufacturing trade balance. The acceleration of total factor productivity growth since the mid-1980s suggests that trade liberalization, which started in 1985, combined with deregulation and other reforms have played an important role. [18] However, according to some estimates, despite the improvement, total factor

---

[17] Note, however, that the model is a short-term model and may thus not capture well a possible stock-adjustment of capital good imports.

[18] See Tybout-Westbrook (1992).

productivity growth in manufacturing was relatively low: 2% on average in 1985-87 and 2.8% in 1988-90. [19] Comparative measures of gross labor productivity growth are discouraging as well. For example, gross labor productivity growth was low when compared with South East Asian countries, Mexico's most relevant competitors in US markets. [20] Even comparisons with developed countries do not raise optimism: over the 1985-90 post-trade liberalization period, Mexico's gross labor productivity growth averaged 3.7%, the same as the US but less than the 4.1% average rate of the U.K or the 4.5% average rate of Japan (Figure 8). Manufacturing labor productivity growth accelerated in the early 1990s. However, based on our simulations, even if productivity would have grown at twice the rate it actually grew over the 1980s, Mexico's manufacturing trade deficit (excluding maquila) would have only been 19% smaller in 1991.

In short, structural factors are unlikely to help reverse recent trends in Mexico's trade balance, at least over the short to medium term. While consolidation of reforms is likely to enhance average productivity growth, an improvement in Mexico's manufacturing trade balance will have to come from cyclical factors such as higher foreign demand and, particularly, an improvement in Mexico's real exchange rate.

---

[19] See F. Clavijo (1992).

[20] Our measure of gross labor productivity is based on hours worked in the manufacturing sector provided by the "Secretaria de Trabajo" and the manufacturing output index provided by the Bank of Mexico.

V.3 Can higher investment pick up the slack in consumer demand?

Private investment has been an important component of Mexico's 1989-92 recovery. Over this period, private fixed investment averaged 13.5% real growth, that is, about four times faster than average output growth. The foreign investment trend is even more impressive: total foreign investment (including portfolio investment) increased from US$2.6 billion in 1988 to an estimated US$33.3 billion in 1993.

Although strong investment activity appears to have been driven mainly by structural factors (privatization, trade and financial liberalization, deregulation and improved access to foreign capital markets), cyclical factors are likely to have played an important role too. One of such cyclical factors is the real exchange rate.[21] Another is, of course, the economic cycle per se. The real peso appreciation that resulted from large capital inflows has encouraged investment both by reducing the cost of capital good imports and through lower interest rates. As capital inflows slow down and the real exchage rate depreciates (cf. Subsection V.1), the reverse can be expected: the higher cost of imported capital and higher interest rates will discourage investment.

It is thus possible that the real peso appreciation was perceived as transitory. In this case, some firms may have stepped up investment in imported capital goods from fear of a real peso depreciation later (or a reversal of trade regime), thus, exacerbating the cyclical pattern of investment. Note that if the real peso appreciation was initially perceived

[21] Based on the portfolio stock adjustment hypothesis, the real exchange rate is likely to exhibit a cyclical behavior (cf. subsection V.1).

to be temporary, a slowdown of investment growth from this source would be most likely in the future (as the opportunity to buy cheap comes to an end).

The macroeconomic implication is that a cyclical pick-up in investment is unlikely to lead the recovery over the short term. However, a deepening of reform in the context of NAFTA, reduced political uncertainty after the 1994 presidential elections, and overall low price stability are likely, over the medium term, to prompt a recovery of investment.

Digression: NAFTA, the exchange rate and investment.

It is often argued that low Mexican wages will be the key to massive investment in Mexico (possibly including the relocation of many US firms) and that, in view of this investment, there is scope for substantial further real appreciation of the peso. However, while the unadjusted ratio of average US-Mexico manufacturing wages was 5.23 in 1991,[22] the productivity-adjusted ratio was in the same year 1.026, i.e., the relevant wage differential (or unit labor cost differetial) was actually quite small or virtually non-existent in 1992.[23] This implies that a further real peso appreciation (measured through wages) could strongly erode Mexican external competitiveness

---

[22] This includes fringe benefits in the case of Mexico. The source for Mexico is INEGI and the concept is average compensation per employee in manufacturing ("Remuneracion media por persona ocupada en el sector manufacturero"); the 1991 figure was 72,088 pesos per day which, divided by the average peso-dollar ER of 1991 (3018.4), is US$23.88. Hourly compensation in the US was obtained from the US Department of Labor (March, 1993) and was US$15.6 in 1991; we converted this into a daily figure by multiplying it by the 8 hours of a working day, so that the daily average compensation per employee in manufacturing was US$124.8 in 1991.

[23] Manufacturing output per employee in the US was in 1991 US$70,384 and in Mexico US$13,824. The US figure is the ratio of value added by manufacturing (US$tr 1.32205 in 1990 multiplied by the ratio of the 1991-90 US industrial production index of IMF-IFS and multiplied by the ratio of the 1991-90 US producer price index INF-IFS, i.e., US$tr. 1.29665 in 1991), and 1991 US manufacturing employment (18,455,000). The Mexican figure is the ratio of manufacturing GDP in 1991 (pesos bn. 189399.8 divided by 3,018.4, the 1991 peso-dollar ER, i.e., US$mi.62,748), and manufacturing employment (4,493,279, manufacturing employment according to the 1990 Census, times the ratio of the 1991-90 manufacturing employment index of Bank of Mexico, i.e., 4,538,832).

unless offset by increases in the productivity growth differential of similar magnitude. It also means that, under NAFTA, there are important opportunities for new investment in activities that contribute to increase Mexico's productivity growth differential vis a vis the US and Canada. Such activities include investment in machinery and equipment that brings, associated with it, substantial skills enhancement, as well as investment in infrastructure and, more generally, in the service sector (the latter are essential inputs for tradable activities). [24] The service sector has been relatively more close to foreign competition and, to that extent, it is not surprising that the bulk of foreign direct investment into Mexico (about 80%) over the early 1990s has gone into this sector. [25]

In short, while NAFTA is likely to have a strong impact on investment, the magnitude of this impact will be driven more by opportunities to increase productivity than by the absolute wage differential per se. To that extent, opportunities for investment are likely to be found across a wide spectrum of activities (including services) and not, as anti-NAFTA forces in the US presumed, mainly in manufacturing. This is important because it implies that job losses in the US are less likely; in fact, to the extent that the bulk of US investment in Mexico over recent years has been in services, it implies that more (not less) US jobs are likely.

---

[24] Of course, closing the productivity gap (and, thus, the wage gap) will take a long time and will involve as well (among other things) substantial institutional developments to reduce regulatory uncertainty, increase competition and boost factor mobility, including more labor market flexibility.

[25] This is, by the way, one reason for which much of the NAFTA discussion in terms of the loss of US manufacturing jobs to Mexico was missguided.

VI. Conclusions.

Mexico's experience with capital markets has gone through a remarkable series of transformations over the past two decades. A stable period of high growth, low inflation and prudent external borrowing came to an end when oil revenues and populist leaders triggered a dash for fiscal expansion well beyond the limits posed by the new revenue constraints. This expansion came to a crashing halt in 1982, an event that was clearly anticipated by private individuals in Mexico: capital flight in fact started to take off well before the debt crisis. Intriguingly, commercial banks continued to lend long after alarmbells should have gone off: Mexico's debt was rising much faster than GDP, towards 1980 external interest rates turned sharply up, well in excess of Mexico's growth rates, and oil prices, after their initial jump in 1979, fell almost as fast as they rose earlier.

All this came to an end during the debt crisis, a crisis which was in fact set off by Mexico's suspension of interest payments in August 1982. The next decade clearly left no opportunity to continue as before. It is to Mexico's credit that her leaders saw this early and embarked on a difficult but ultimately spectacularly successful reform program. International capital markets did not give Mexico the breathing space needed to bridge the period between the up front costs of the program and the eventual benefits; between 1982 and 1990, Mexico had to rely almost exclusively on international institutions like the World Bank for external finance.

This situation changed drastically in 1989/1990, when Mexico became the first country to conclude a "Brady deal". Contrary to convential wisdom, the partial write down of the commercial banks' debt opened the flood gates in

terms of capital inflows into Mexico. In this paper we have shown that reduced future uncertainty, more than reduced future transfers, explain this spectacular success of the debt reduction package.

The massive capital inflows into Mexico in the years following the Brady deal clearly have an element of stock adjustment to them. Two reasons for this view stand out. First, a large part of the inflows were in response to the privatization program, particularly the selling off of the telephone company (TELMEX) and the commercial banks. But this program is now (late 1992) by and large completed. Second, we demonstrated that a large part of the capital inflow consisted not so much of foreigners investing in Mexico, but of Mexicans bringing their flight capital back in. And since this can only be done once, the current rate of inflows must be considered temporary.

This is a potential source of concern, since at the same time Mexico's current account has deteriorated to an extent unparalleled in Mexican history. Once the capital stops flowing, should we expect the current account to improve or is Mexico heading for a major BoP crisis? To answer this question we surveyed the macroeconomic counterparts of the current account deterioration, domestic saving and investment.

Private saving has declined sharply over 1988-92 (well in excess of he improvemet in public saving); as a result of it, at the 1993 domestic saving levels, the relaively fast rates of growth of 1989-92 were no longer sustainable. However, private saving is likely to improve in the future. The sudden relaxation of liquidity constraints in 1989/90 unlocked some pent up consumer demand that is likely to slow down as time goes by; there is evidence that some of the consumer boom was based on asset price developments that are not supported by underlying fundamentals ("bubbles"); since these bubbles are

in fact now defusing, the associated consumer binge is likely to come to an end. Both arguments lead to cautious optimism about the chances of a recovery in private savings.

As to investment, prospects over the medium term also remain sound, but a temporary slowdown in investment is likely. The latter may be associated, in part, to the 1993 output downturn and, in part, to the possible correction in the real exchange rate (which, in fact, began to materialize during the first half of 1994). All this adds up to a likely current account improvement in the foreseeable future.

Finally, while an improvement of private saving is indeed desirable over the medium term, it will exacerbate recessionary pressures in the near future. In view of some downward price/wage inflexibility and Mexico's still relatively rigid exchange rate policy, [26] slowdown pressures could turn into a recession (as it already happened during the second half of 1993). Due to Mexico's strong anti-inflation comittment, a substantial flexibilization of exchange rate policy appears unlikely in the short term.

However, Mexico's fortunes will ultimately depend strongly on external developments such as a stronger US and world economic recovery, on further advances in the implementation of NAFTA and the reform program, and on reduced political uncertainties after the 1994 elections are over. All these factors could eventually prompt higher investment; if, in addition, external competitiveness improves, a gradual improvement in private saving may be achieved along with moderate growth and further consolidation of inflation gains.

---

[26] Since November, 1991, Mexico has an exchange rate band, with a floor that is fixed and a ceiling which has been depreciated at an annual rate between 4% and 5% in 1993-94.

References

Brideaux-Hall, R., H. Eggerstedt and S. van Wijnbergen (1992), "Measuring Capital Flight in Mexico", mimeo, World Bank, October 1992.

Bulow, J. and K. Rogoff, "The Buyback Boondoggle", Brookings Papers on Economic Activity 2, 1988.

Claessens, C., D. Oks and S. van Wijnbergen, "Interest Rates, Growth and External Debt: the Macroeconomic Impact of Mexico's Brady Deal", mimeo, World Bank, August 1992.

Clavijo, Fernando, "La Eficiencia Productiva del Sector Manufacturero Mexicano, 1985-1990", mimeo, 1992.

Ha, Jiming and D. Oks, "Private Saving and Liquidity Constraints in Mexico, 1980-91", mimeo, World Bank, August 1992.

Hernandez Laos, Enrique, "Evolucion de la Productividad Total de los Factores en la Economia Mexicana (1970-1989)", May 1992, Mexico, unpublished.

Kiguel, Miguel and Nissan Liviatan, "The Business Cycle Associated with Exchange Rate-Based Stabilizations", The World Bank Economic Review, May 1992.

Krugman, Paul, "Financing versus Forgiving a Debt Overhang", Journal of Development Economics, 1989, No. 29.

Tybout, James R., and M. Daniel Westbrook, "Trade Liberalization and the Structure of Production in Mexican Manufacturing Industries", March 1992, World Bank, mimeo.

van Wijnbergen, S., "The Mexican Debt Deal", Economic Policy, April 1991, pp. 13-56.

ANNEX 1. Asset Market Stability.[27]

The approach consists in comparing two prices, the actual price (P) and the fundamental price (P'). If agents are rational, it follows that:

$$P_t = E(P_t' | I_t) \quad (1)$$

From the definition of P', it follows that

$$P_t' = P_t + u_t \quad (2)$$

where

$$E(u_t | P_t) = 0 \quad (3)$$

This is the key rational expectations insight, the basis of the Shiller (1981) test. The difference between the fundamental and the actual price should be uncorrelated with the current price. Taking variances on both sides of equation (2), we obtain

$$V(P') = V(P) + V(u) \quad (4)$$

which implies

$$V(P') \geq V(P) \quad (5)$$

Equation (5) is the inequality initially tested by Shiller. It says that the variance of the fundamental price should exceed the variance of the actual price. The intuition is that since P is a forecast of P', it should move less than P'. Shiller uses US data and finds that the variance inequality is dramatically violated: the estimated ratio V(P)/V(P') is often in excess of 5.

---

[27] This annex was prepared by Jiming Ha while working as a summer intern for the Mexico Country Operations Division at the World Bank during 1992.

To calculate the fundamental price, we use the formula (19)

$$P_t' = \sum_{i=0}^{\infty} \frac{d_{t+i}}{(1 + r)^{i+1}} \quad (6)$$

r is the average real interest rate from 1989 to 1991, and d is dividends in the case of equity and rent in the case of housing.

The actual price is then regressed on the fundamental price with twelve lags. The fitted value of the dependent variable is then treated as the price of the stock that depends on fundamentals. The variance (standard deviation) of both the actual price and the price that depends on fundamentals is calculated. If the ratio of the variance of the actual price to the variance of the price that depends on the fundamentals is greater than 2 there is a "bubble"; otherwise, there is no bubble.

For equity, the standard deviation of the actual price (43.027) was more than twice the standard deviation of the price that depends on fundamentals (21.474). Thus, we conclude that equity markets in Mexico were in a bubble. For houses, the standard deviation of the actual price (36.411) was close to the standard deviation of the price that depends on fundamentals (32.467). Thus, there is no evidence of speculative behavior in housing.

ANNEX 2. Cyclical and Structural Factors of Mexico's Manufacturing Trade Balance.

The record of Mexican manufacturing exports has been impressive: they increased from US$3 billion in 1980 to US$16 billion in 1991 (US$20 billion including the maquila). However, over the 1988-91 "recovery" period Mexico's manufacturing trade balance has deteriorated sharply from a US$2 billion deficit in 1987 to a US$19.5 billion deficit in 1991 (or, including maquila, from a US$0.4 billion deficit to a US$15.3 billion deficit). Concerns about this trend have been growing due to the recent deceleration of manufacturing output growth, to around 2% in the first half of 1992.

An econometric approach was followed to analyze manufacturing trade performance over the 1980-91 period. Regressions were run using Ordinary Least Squares; quarterly data was employed. The final regressions, obtained after sequentially eliminating all statistically insignificant regressors, are ('t'-statistics are shown in parenthesis):

$$(1)\quad TBMAN = -16.711 - 0.616*CU + 36.897*TFP + 54.787*QINT$$
$$(-0.79) \qquad (-5.99) \qquad (2.80) \qquad (3.21)$$

$$- 29.001*QCAP + 0.377*RER - 0.569*W$$
$$(-2.40) \qquad (2.31) \qquad (-7.87)$$

$$R^2 = 0.96 \qquad D\text{-}W = 2.09 \qquad F\text{-statistic} = 162.2$$

(2) TBMM = 25.044 - 0.722*CU + 15.866*QINT - 30.138*USM - 0.584*W

(2.17) (-6.91) (4.96) (-4.65) (-13.58)

R^2 = 0.95 D-W = 2.08 F-statistic = 212.5

where:

TBMAN	non-oil manufacturing trade balance (in constant US dollars)
TBMM	TBMAN plus balance on maquila account
C	constant term
CU	capacity utilization in manufacturing
QINT	import quotas on intermediate goods
QCAP	import quotas on capital goods
RER	ratio of US import price index to dollar price index of Mexico manufacturing exports
W	real exchange rate deflated by the dollar price index of Mexico manufacturing exports and the domestic manufacturing wage index
USM	US imports in constant dollars
TFP	total factor productivity

A distinction is made between short-term (cyclical) and long-term (structural) factors of the non-oil manufacturing trade balance (with and without maquila). Of the cyclical factors, the following have exerted a significant impact on manufacturing trade balance over the 1980-91 period: capacity utilization, foreign demand (US imports) and the real exchange rate (based on a dollar price index of Mexico's manufacturing exports and Mexico's

manufacturing wages). [28] The two significant structural factors were: productivity growth (total factor productivity) [29] and trade liberalization (captured by quotas on capital and intermediate good imports). The simulated impact of these factors is discussed below. All simulations are within sample simulations in which the actual value of one of the regressors is replaced by a hypothetical value (discussed below) while the other regressors keep their actual values. The estimated impact on the dependent variable of hypothetical changes in the regressors is summarized in Table 1.

It follows that productivity growth will not, by itself, reverse recent trends in Mexico's manufacturing trade balance over the short- to medium-term. While consolidation of reforms and maturing of recent investments is likely to enhance average productivity growth, an improvement in Mexico's manufacturing trade balance will, over the short to medium term, have to come from cyclical factors: a decline of domestic demand with respect to foreign demand, and/or an improvement in Mexico's real exchange rate. The implication is that if a slowdown in capital inflows indeed materializes under a fixed exchange rate regime and under unchanged wage flexibility either a strong US recovery or a severe slowdown in Mexico will be required to restore external balance.

---

[28] Other short-term factors tested were not statistically significant: public investment, domestic real interest rates and US GDP. The ratio of Mexican non-oil manufacturing goods prices to the price index of all US imports was only partially significant (at an 85% level of confidence).

[29] Total factor productivity was obtained from Hernandez Laos, Enrique "Evolucion de la Productividad Total de los Factores en la Economia Mexicana (1970-1989)", May 1992, Mexico, unpublished report. However, since this study has estimates for up to 1989 only, for the sub-period 1990-91 we employed a measure of gross labor productivity in manufacturing based on Bank of Mexico's "Indicadores" employing an index of manufacturing output and manufacturing employment.

Table (Annex). Simulated Impact of Hypothetical Changes in Regressors.

Percentage change of TBMAN at end of 1991	Hypothesis about Regressor
1. -10%	CU remains at end of 1987 level
2. -19%	. TFP grows twice as fast

Percentage change of TBMM at end of 1991	Hypothetsis about Regressor
1. -20%	USM remain at 1989 level
2. -58%	W remains at end of 1988 level

Table 1: Resource Flows (US$ millions).

	DEBT FLOWS			NON-DEBT FLOWS		
	Official Creditors	Private Creditors	Total a)+b)	a) DFI	b) Portfolio Investment	TOTAL FLOWS
1970	141.70	571.02	316.24	316.24	0.00	1028.96
1971	85.90	582.48	324.15	324.15	0.00	992.53
1972	145.10	468.87	281.20	281.20	0.00	895.17
1973	172.60	2163.38	363.02	363.02	0.00	2698.99
1974	325.40	3734.49	549.55	549.55	0.00	4609.43
1975	380.80	5102.58	505.02	505.02	0.00	5988.40
1976	300.70	5423.67	517.04	517.04	0.00	6241.40
1977	301.90	2671.54	540.33	540.33	0.00	3513.77
1978	257.80	3120.96	826.85	826.85	0.00	4205.61
1979	283.10	5080.37	1331.83	1331.83	0.00	6695.30
1980	794.90	9736.90	2155.08	2155.08	0.00	12686.89
1981	933.60	26847.32	2835.67	2835.67	0.00	30616.59
1982	1620.10	7299.47	1657.30	1657.30	0.00	10576.87
1983	-275.90	2109.53	460.50	460.50	0.00	2294.13
1984	836.06	831.09	391.10	391.10	0.00	2058.25
1985	809.33	-1732.82	490.47	490.47	0.00	-433.02
1986	1478.60	-1330.27	1521.96	1521.96	0.00	1670.29
1987	888.80	85.47	3247.62	3247.62	0.00	4221.89
1988	997.00	-3285.97	2594.65	2594.65	0.00	305.68
1989	937.00	-259.72	3530.24	3036.90	493.34	4207.52

1990	4175.00	7717.42	4627.72	2633.24	1994.48	16520.13
1991	1554.00	7948.24	14632.00	4761.50	9870.00	24134.00
1992	2031.00	5005.00	18919.00	5366.00	13553.00	25955.00
1993			33331.00	4900.00	28431.00	30882.00

Source: Bank of Mexico.

Table 2. Macroeconomic Sources of the Current Account Deficit 1992 vs 1988-89
(percentage points of GDP)

1. Decline in Current Account Balance	4.6
2. Increase in Public Saving	4.0
3. Increase in Total Investment	2.2
4. Decline in Private Saving (= 1 + 2 - 3)	6.4

Note. Based on current price data. Source. INEGI and Bank of Mexico.

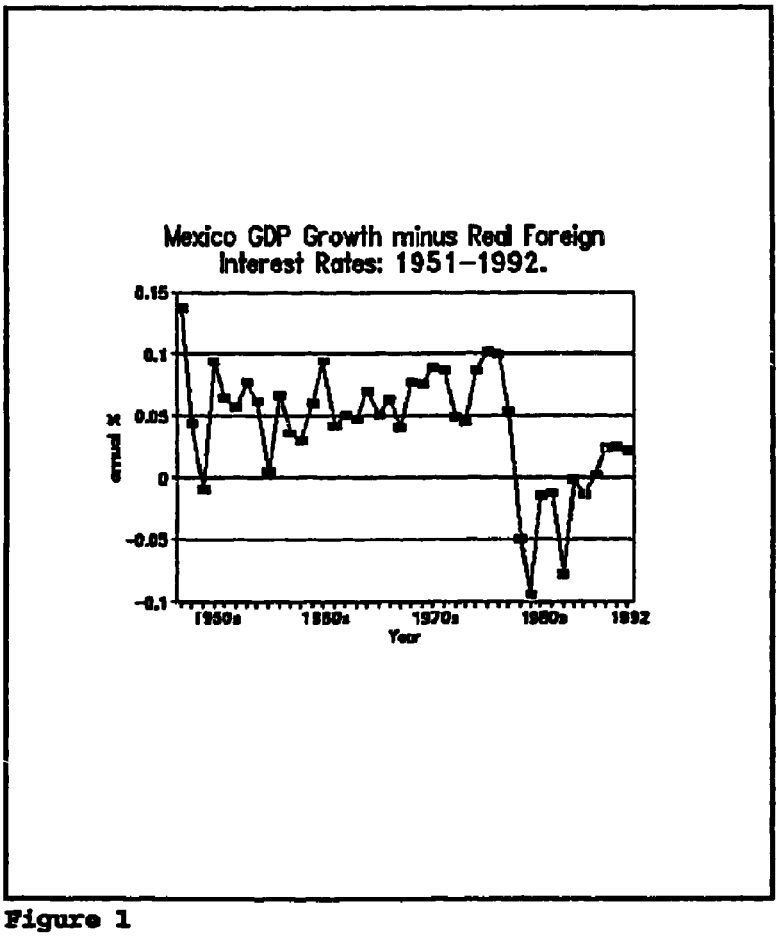
Mexico GDP Growth minus Real Foreign Interest Rates: 1951–1992.
0.15
0.1
0.05
0
-0.05
-0.1
annual %
1950s
1960s
1970s
1980s
1992
Year

Figure 1

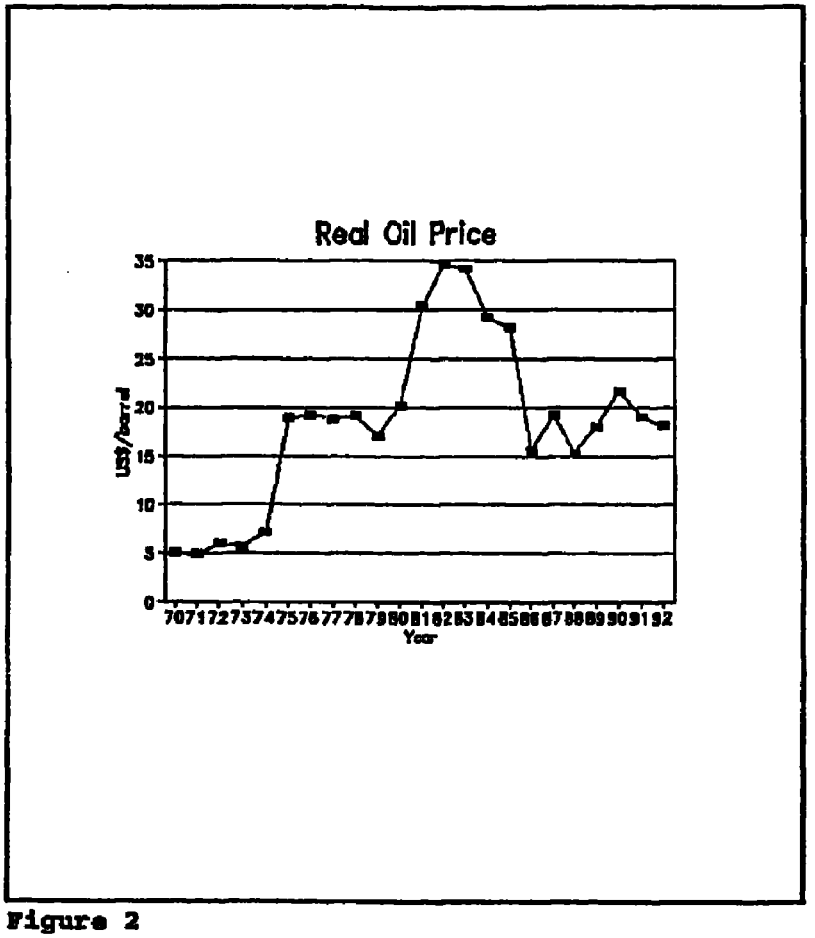

Figure 2

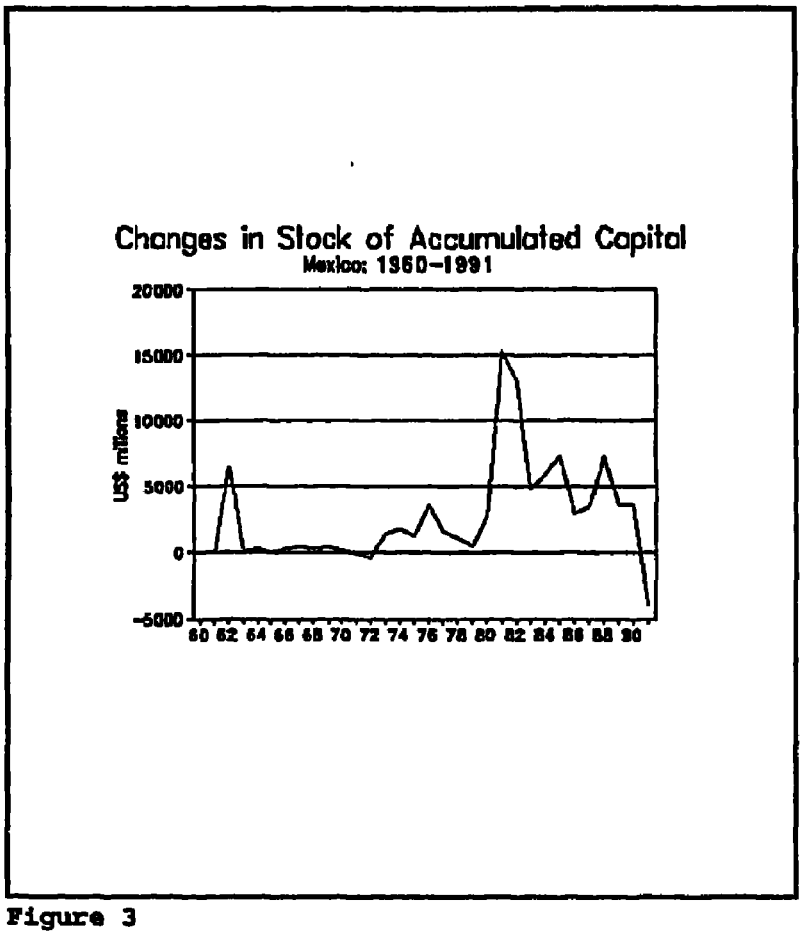
Changes in Stock of Accumulated Capital
Mexico: 1960-1991
US$ millions
20000
15000
10000
5000
0
-5000
60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90

Figure 3

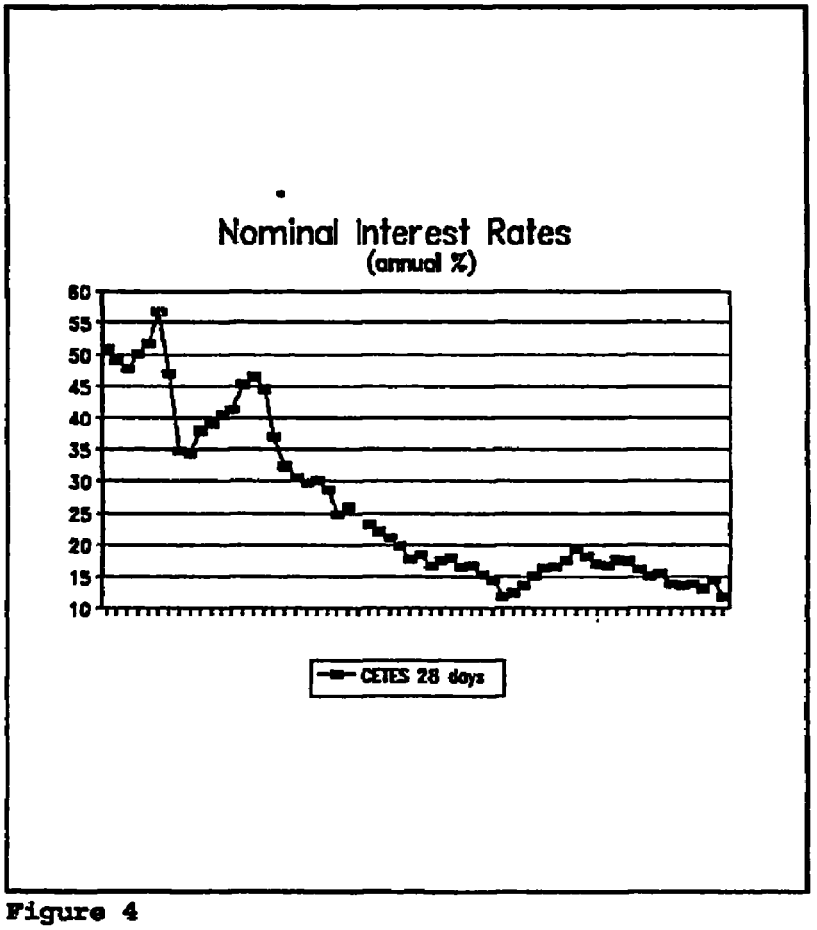
Nominal Interest Rates
(annual %)
60
55
50
45
40
35
30
25
20
15
10
CETES 28 days

Figure 4

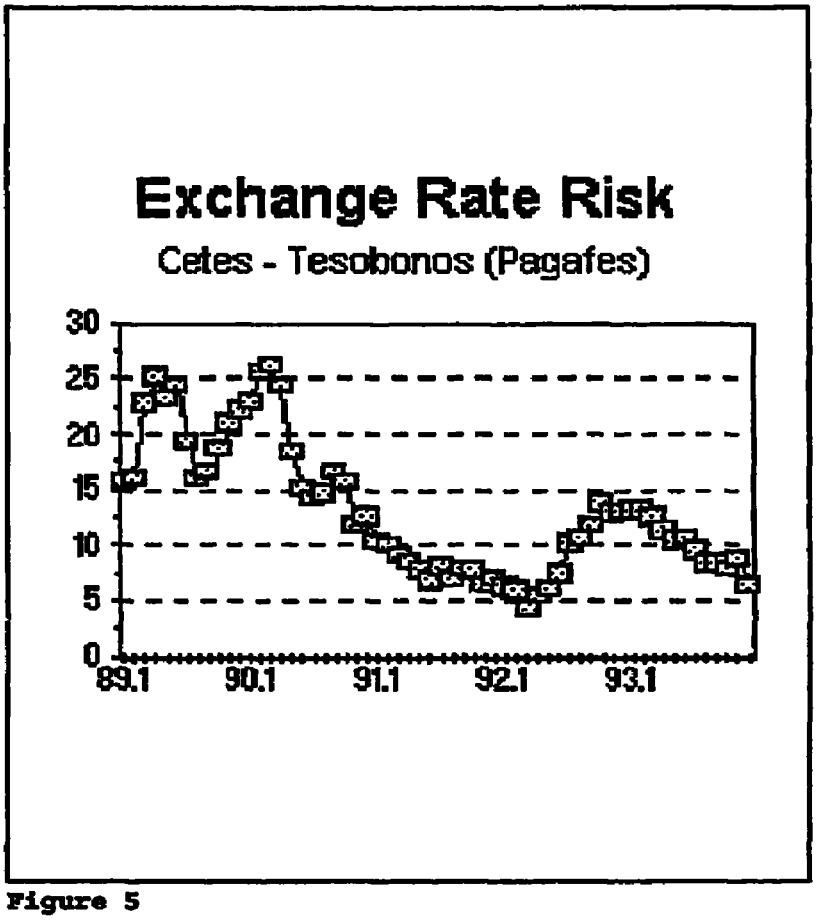
Exchange Rate Risk
Cetes - Tesobonos (Pagafes)
30
25
20
15
10
5
0
89.1
90.1
91.1
92.1
93.1

Figure 5

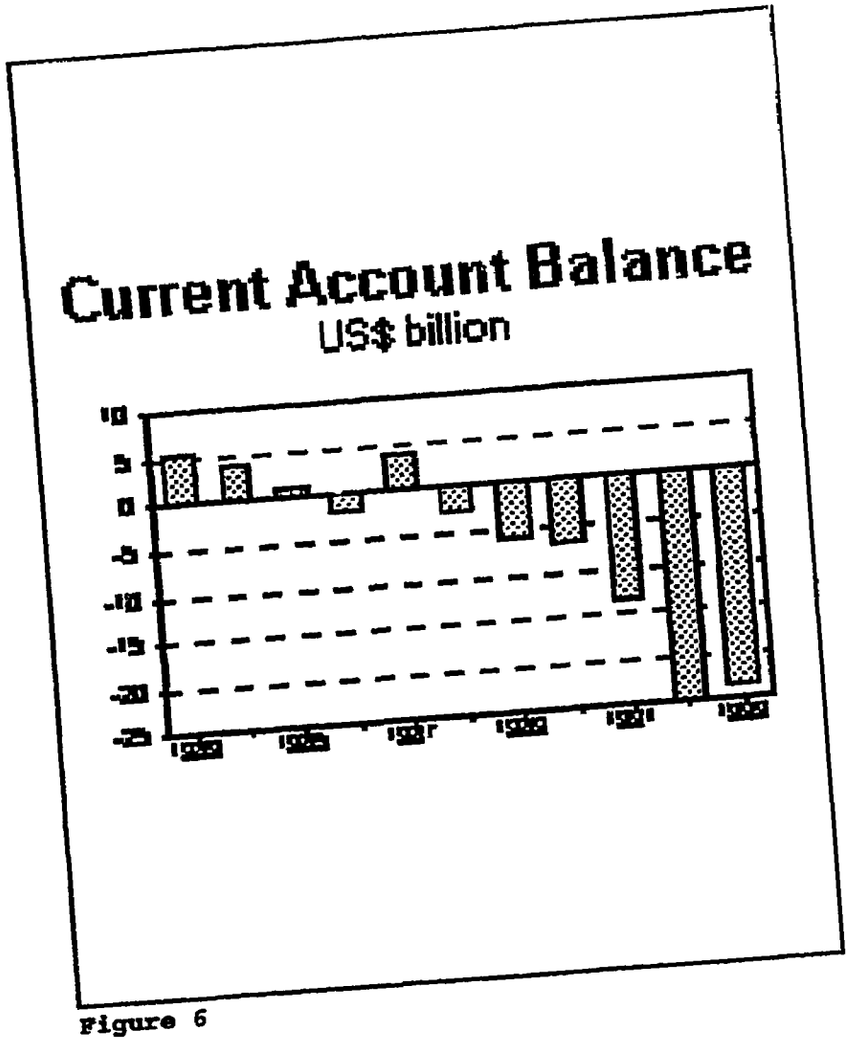

Figure 6

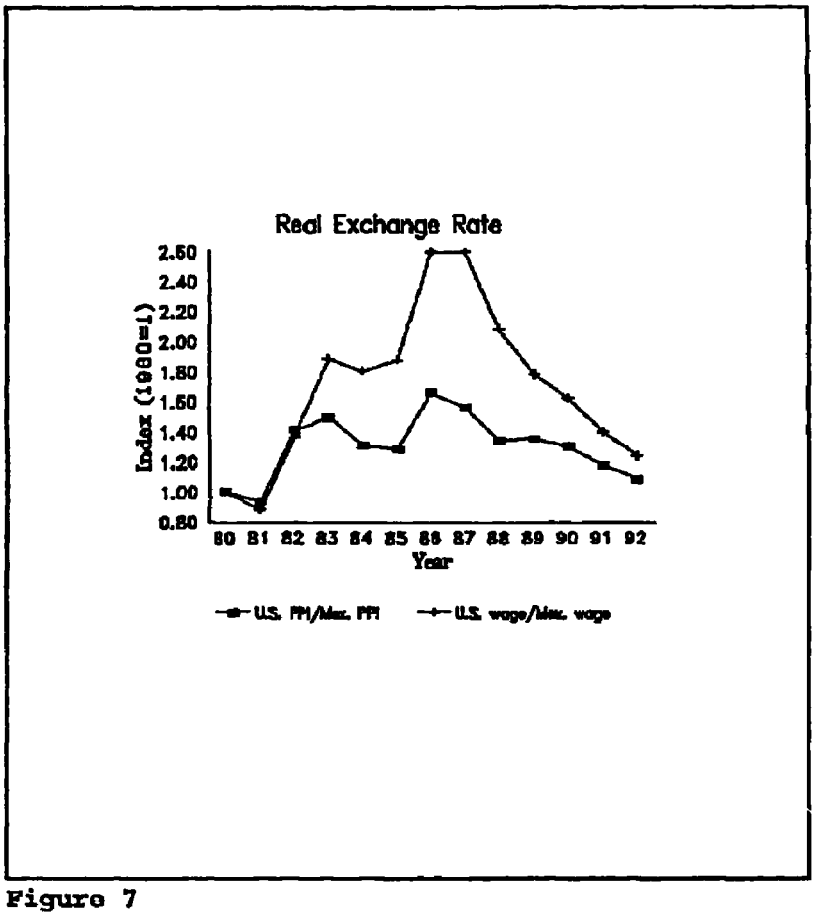
Real Exchange Rate
Index (1980=1)
2.60
2.40
2.20
2.00
1.80
1.60
1.40
1.20
1.00
0.80
80 81 82 83 84 85 86 87 88 89 90 91 92
Year
U.S. PPI/Mex. PPI
U.S. wage/Mex. wage

Figure 7

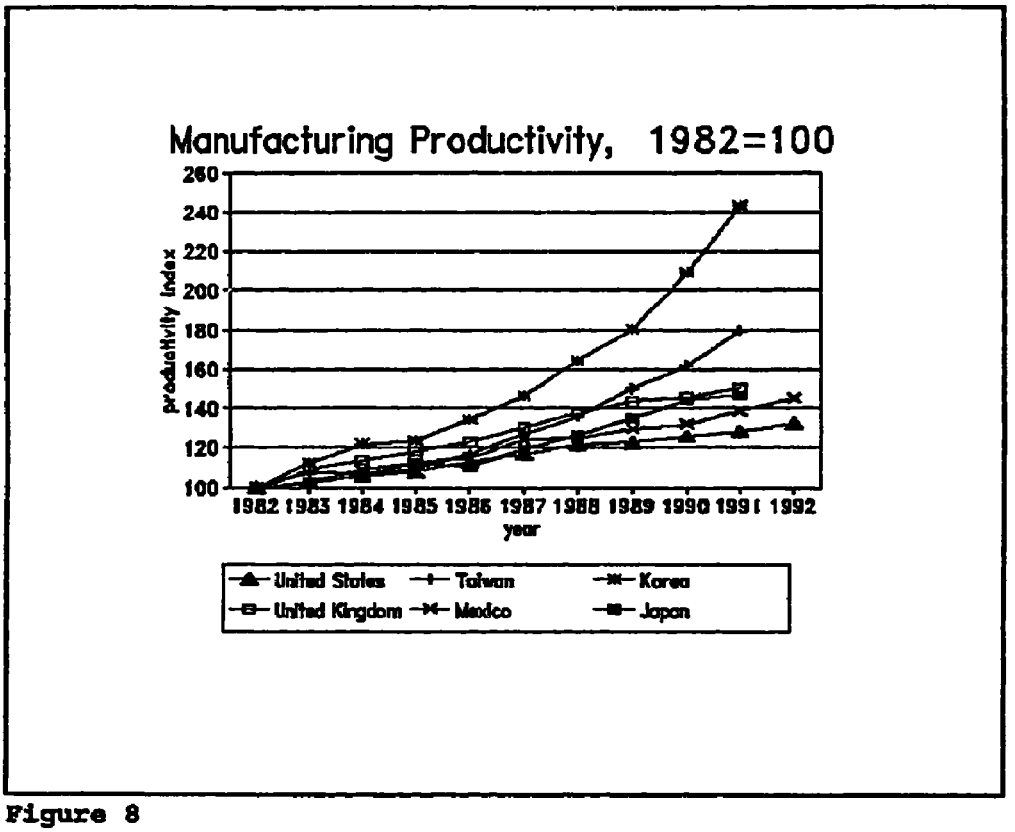
Manufacturing Productivity, 1982=100
productivity index
260
240
220
200
180
160
140
120
100
1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992
year
United States
Taiwan
Korea
United Kingdom
Mexico
Japan

Figure 8

Policy Research Working Paper Series

	Title	Author	Date	Contact for paper
WPS1358	Patterns of Behavior in Biodiversity Preservation	Andrew Metrick Martin L. Weitzman	September 1994	A. Marañon 39074
WPS1359	When Method Matters: Toward a Resolution of the Debate about Bangladesh's Poverty Measures	Martin Ravallion Binayak Sen	September 1994	P. Cook 33902
WPS1360	Are Portfolio Flows to Emerging Markets Complementary or Competitive?	Sudarshan Gooptu	September 1994	R. Vo 31047
WPS1361	External Shocks and Performance Responses during Systemic Transition: The Case of Ukraine	F. Desmond McCarthy Chandrashekar Pant Kangbin Zheng Giovanni Zanalda	September 1994	M. Divino 33739
WPS1362	Regulation, Institutions, and Commitment: The Jamaican Telecommunications Sector	Pablo T. Spiller Cezley I. Sampson	October 1994	B. Moore 38526
WPS1363	Brazil's Sugarcane Sector: A Case of Lost Opportunity	Brent Borrell José R. Bianco Malcolm D. Bale	October 1994	M. Bale 31913
WPS1364	Why Do Some Economies Adjust More Successfully Than Others? Lessons from Seven African Countries	Ishrat Husain	October 1994	J. Schwartz 32250
WPS1365	The Macroeconomics of Adjustment in Sub-Saharan African Countries: Results and Lessons	Ishrat Husain	October 1994	J. Schwartz 32250
WPS1366	Distributive Concerns When Replacing a Pay-As-You-Go System with a Fully Funded System	Salvador Valdés-Prieto	October 1994	E. Khine 37471
WPS1367	The Economics of Cash Shortage	Patrick Conway	October 1994	L. Suki 33974
WPS1368	Sustained Inflation in Response to Price Liberalization	Patrick Conway	October 1994	L. Suki 33974
WPS1369	Economic Policy Reform, Government Debt Guarantees, and Financial Bailouts	Philip L. Brock	October 1994	P. Sintim-Aboagye 38526
WPS1370	Is East Asia Less Open than North America and the European Economic Community? No	Sumana Dhar Arvind Panagariya	October 1994	J. Ngaine 37959

Policy Research Working Paper Series

	Title	Author	Date	Contact for paper
WPS1371	The Evolution of Trade Treaties and Trade Creation: Lessons for Latin America	Sarath Rajapatirana	October 1994	J. Troncoso 37826
WPS1372	Administrative Charges in Pensions in Chile, Malaysia, Zambia, and the United States	Salvador Valdés-Prieto	October 1994	E. Khine 37471
WPS1373	Firm Behavior and the Labor Market in the Hungarian Transition	Simon Commander Janos Kollo Cecilia Ugaz	October 1994	B. Keller 35195
WPS1374	Infrastructure Finance: Issues, Institutions, and Policies	Anand Chandavarkar	November 1994	M. Geller 31393
WPS1375	Policy Lessons from a Simple Open-Economy Model	Shantayanan Devarajan Delfin S. Go Jeffrey D. Lewis Sherman Robinson Pekka Sinko	November 1994	C. Jones 37699
WPS1376	How Trade, Aid, and Remittances Affect International Migration	Maurice Schiff	November 1994	J. Ngaine 37947
WPS1377	Macroeconomic Adjustment to Capital Inflows: Latin American Style versus East Asian Style	Vittorio Corbo Leonardo Hernández	November 1994	R. Vo 31047
WPS1378	Mexico after the Debt Crisis: Is Growth Sustainable?	Daniel Oks Sweder van Wijnbergen	November 1994	S. Harbi 37143